

1. (canceled)
2. (canceled)
3. (previously presented) A suspension system for a motorcycle comprising:
  - a. a motorcycle main frame;
  - b. a swing arm pivotally mounted to the motorcycle main frame about a pivot axis;
  - c. at least one air-bag suspension system, the air-bag suspension system forming a shock absorber which includes at least one air-bag constructed of an elastomeric material, the air-bag is housed within a housing assembly and is secured at one end to a piston located within the housing assembly and at an other end to an upper plate or end cap of the housing assembly; and,
  - d. the shock absorber is attached at a forward end to a cross member plate of the motorcycle main frame and is pivotally attached at a rearward end to a lower transverse cross member of the swing arm.

4. (previously presented) A suspension system for a motorcycle comprising:

- a. a motorcycle main frame;
- b. a swing arm pivotally mounted to the motorcycle main frame about a pivot axis;
- c. at least two air-bag suspension systems, the air-bag suspension systems forming two parallel shock absorbers which include at least one air-bag constructed of an elastomeric material, the air-bag is housed within a housing assembly and is secured at one end to a piston located within the housing assembly and at an other end to an upper plate or end cap of the housing assembly; and,
- d. the shock absorber is attached at a forward end to a cross member plate of the motorcycle main frame and is pivotally attached at a rearward end to a lower transverse cross member of the swing arm.

5. (previously presented) In combination, a suspension system and a motorcycle frame comprising:

- a. a motorcycle main frame; and,
- b. a swing arm pivotally mounted to the motorcycle main frame about a pivot axis, an air-bag suspension system, the air-bag suspension system forming a shock absorber which includes at least one air-bag constructed of an elastomeric material, the air-bag is housed within a housing assembly and is secured at one end to a piston located within the housing assembly and at an other end to an upper plate or end cap of the housing assembly, the housing assembly is attached to a shock absorber, and the shock absorber is attached at a forward end to a cross member plate of the motorcycle main frame and is pivotally attached at a rearward end to a lower transverse cross member of the swing arm.

6. (new) A motorcycle comprising:
  - a. a motorcycle main frame having rear spaced-apart struts;
  - b. a swing arm assembly, the swing arm including a pair of spaced apart wheel mounts together carrying a rear wheel therebetween, each of the wheel mounts of the pair of wheel mounts having a first arm and a second arm extending from the wheel mount and a connector connecting the first arm to the second arm of the wheel mount, the connectors joined to each other by upper and lower transverse cross members, and an intermediate cross member extending between the connectors and serving as a pivoting connection to the frame between the struts of the frame, wherein the connection to the frame pivots to allow the rear wheel to pivot and move arcuately relative to the motorcycle main frame;
  - c. a forward frame mount on the main frame;
  - d. a swing arm mount on the lower connector of the swing arm, the swing arm mount situated below the pivotable connection between the frame and the swing arm; and,
  - e. an air-bag suspension member connected between the forward frame mount on the frame and the swing arm mount on the swing arm, the air-bag suspension member including a piston, generally horizontally disposed and compressing the air-bag suspension member when the rear wheel rises and extending the air-bag suspension member when the rear wheel drops.

7. (new) The motorcycle of claim 6, wherein the motorcycle, exclusive of the air-bag suspension member, is a Harley Davidson SOFTAIL® motorcycle.

8. (new) The motorcycle of claim 6, wherein the air-bag suspension member includes air.

9. (new) The motorcycle of claim 8, wherein the air included in the air-bag suspension member is pressurized.

10. (new) The motorcycle of claim 9, wherein the pressurized air in the air-bag suspension member is adjustable.

11. (new) The motorcycle of claim 10, wherein adjustment of the adjustable pressurized air in the air-bag suspension member alters ride height of the motorcycle.

12. (new) The motorcycle of claim 8, wherein the air-bag suspension member is characterized by a support spring force which is a function of compression stroke.

13. (new) The motorcycle of claim 12, wherein the support spring force is a progressive function of compression stroke.

14. (new) The motorcycle of claim 13, wherein the support spring force is an exponential function of compression stroke.

15. (new) The motorcycle of claim 14, wherein the air in the air-bag suspension member can be pressurized to alter the support spring force function of compression stroke.

16. (new) The motorcycle of claim 15, wherein increasing air pressure in the air-bag suspension member increases the progressive function of support spring force to compression stroke.

17. (new) An air-bag suspension for replacement of a stock coil spring suspension in a soft tail type motorcycle characterized by a motorcycle main frame with a cross member plate and a swing arm, the swing arm pivotably attached to the motorcycle frame and having a transverse cross member, the stock coil spring suspension having a forward end attached to the cross member plate and a rearward end pivotably attached to the transverse cross member, the air-bag suspension for replacement of a stock coil spring suspension comprising:

- a. at least one air-bag constructed of elastomeric material, the air-bag having a first end and a second end;
- b. a housing assembly with an end cap, the housing assembly enclosing the air-bag, and the first end of the air-bag secured to a piston located within the housing assembly and the second end of the air-bag secured to the end cap; and,
- c. a shock absorber, the shock absorber having a forward end and a rearward end, the shock absorber attached to the housing assembly and the shock absorber attachable at the forward end to the cross member plate of a motorcycle main frame and pivotably attachable at the rearward end to the lower transverse cross member of the swing arm.

18. (new) The air-bag suspension of claim 17, wherein the motorcycle is a Harley Davidson SOFTAIL® motorcycle and the stock coil spring suspension is characterized by a spring force which is a linear function of shock stroke.

19. (new) The air-bag suspension of claim 18, wherein the air-bag suspension is characterized by a spring force which is a progressive function of shock stroke.

20. (new) The air-bag suspension of claim 17, wherein the air-bag suspension includes air.

21. (new) The air-bag suspension of claim 20, wherein the air included in the air-bag suspension is pressurized.

22. (new) The air-bag suspension of claim 21, wherein the pressurized air in the air-bag member is adjustable.

23. (new) The air-bag suspension of claim 22, wherein adjustment of the adjustable pressurized air in the air-bag suspension alters ride height of a motorcycle employing the air-bag suspension.

24. (new) The air-bag suspension of claim 20, wherein the air-bag suspension is characterized by a support spring force which is a function of compression stroke.

25. (new) The air-bag suspension of claim 24, wherein the support spring force is a progressive function of compression stroke.

26. (new) The air-bag suspension of claim 25, wherein the support spring force is an exponential function of compression stroke.

27. (new) The air-bag suspension of claim 26, wherein the air in the air-bag suspension member can be pressurized to alter the support spring force function of compression stroke.

28. (new) The air-bag suspension of claim 27, wherein increasing air pressure in the air-bag suspension increases the progressive function of support spring force to compression stroke.

29. (new) The air-bag suspension of claim 17, wherein the air-bag is one of a pair of air-bag suspensions for replacing a pair of stock coil spring suspensions.

30. (new) The air-bag suspension pair of claim 29, wherein the pair are connected to an air compressor.



31. (new) In a soft tail type motorcycle, the improvement comprising a replacing the stock coil spring suspension pair with an air-bag suspension pair.

32. (new) The improvement of claim 31, further comprising adjusting the air in the air-bag suspension pair to provide a desired ride height.

33. (new) The improvement of claim 31, further comprising adjusting the air in the air-bag suspension to provide a desired spring force at a selected shock stroke.

34. (new) The improvement of claim 31, further comprising adjusting the air in the air-bag suspension to a spring force from about 0 lbs to about 750 lbs at about 0 inches shock stroke.

35. (new) The improvement of claim 31, further comprising adjusting the air in the air-bag suspension to a spring force from about 10 lbs to about 1000 lbs at about 0.5 inches shock stroke.

36. (new) The improvement of claim 31, further comprising adjusting the air in the air-bag suspension to a spring force from about 30 lbs to about 1500 lbs at about 1.0 inches shock stroke.

37. (new) The improvement of claim 31, further comprising adjusting the air in the air-bag suspension to a spring force from about 200 lbs to about 2800 lbs at about 1.5 inches shock stroke.